

MAI-14602/16
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CLAIMS

- 1 1. A piston pin having a low friction coating thereupon, said
2 coating comprising:
3 a vapor deposited coating of a compound of a metal, said compound
4 being selected from the group consisting of: carbides, nitrides, oxynitrides,
5 carbonitrides, sulfides, and mixtures thereof.
- 1 2. The piston pin of claim 1, wherein said metal is a group
2 IVA-VIA metal.
- 1 3. The piston pin of claim 1, wherein said metal is chromium.
- 1 4. The piston pin of claim 1, wherein said vapor deposited coating
2 is a coating of chromium nitride.
- 1 5. The piston pin of claim 1, wherein said vapor deposited coating
2 is polished.
- 1 6. The piston pin of claim 1 wherein the coating is deposited as a
2 plurality of layers.

1 7. The piston pin of claim 1 wherein the coating is formed a
2 plurality of layers of different compounds selected from the group consisting of
3 carbides, nitrides, oxynitrides, carbonitrides, sulfides, and mixtures thereof.

1 8. The piston pin of claim 1, wherein said vapor deposited coating
2 is a coating which is deposited by a process selected from the group consisting
3 of: physical vapor deposition, chemical vapor deposition, evaporation, plasma
4 assisted chemical vapor deposition, arc vapor deposition, and combinations
5 thereof.

1 9. A piston assembly for an internal combustion engine of the type
2 in which a piston is connected to a connecting rod by means of a piston pin,
3 wherein the improvement comprises:

4 at least a portion of one of said piston pin and connecting rod being
5 coated with a vapor deposited coating of a compound of a metal, said
6 compound being selected from the group consisting of: carbides, nitrides,
7 oxynitrides, carbonitrides, sulfides, and mixtures thereof.

1 10. The piston assembly of claim 9, wherein said metal is a group
2 IVA-VIA metal.

1 11. The piston assembly of claim 9, wherein said compound is
2 chromium nitride.

1 12. The piston assembly of claim 9, wherein said coating is a
2 polished coating.

1 13. The piston assembly of claim 9 wherein the coating is deposited
2 as a plurality of layers.

1 14. The piston assembly of claim 9 wherein the coating is formed a
2 plurality of layers of different compounds selected from the group consisting of
3 carbides, nitrides, oxynitrides, carbonitrides, sulfides, and mixtures thereof.

1 15. An internal combustion engine wherein at least a portion of a
2 component thereof which is in sliding contact with another component thereof
3 is coated with a vapor deposited coating comprised of a compound of a metal,
4 said compound being selected from the group consisting of: carbides, nitrides,
5 oxynitrides, carbonitrides, sulfides, and mixtures thereof.

1 16. A method for decreasing friction in an internal combustion
2 engine, said method comprising coating at least a portion of a surface of one
3 component thereof, which is in sliding contact with another component thereof,
4 with a vapor deposited coating comprising a compound of a metal, said
5 compound being selected from the group consisting of carbides, nitrides,
6 oxynitrides, carbonitrides, sulfides, and mixtures thereof.

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1 17. The method of claim 16, wherein said step of coating at least a
2 portion of a surface of a component comprises coating said at least a portion of
3 said surface in a vapor deposition process.

1 18. The method of claim 17, wherein said vapor deposition process
2 is selected from the group consisting of physical vapor deposition, chemical
3 vapor deposition, evaporation, plasma assisted chemical vapor deposition, arc
4 vapor deposition, and combinations thereof.

1 19. The method of claim 16, wherein said component comprises a
2 piston pin.

1 20. The method of claim 16, wherein said component comprises a
2 connecting rod.